F.G.R.2 PHANTOM
N°92 SQUADRON
ROYAL AIR FORCE

VP
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ACKNOWLEDGEMENTS

Many people have again been involved to get us what we wanted to make this book an interesting one. Few books cover the three types of British Phantoms in full color like this one does and we hope it benefits not only the modeler, but also those interested in the aircraft and its systems.
Therefore, we would like to thank the following individuals for their support and assistance: Wing Commander Graham CLARKE, Wing Commander Barry TITCHEN, SqnLdr Steve SMYTH (74Sqn), SqnLdr C.BAGNELL and SqnLdr R.COOKE (56Sqn), FltLt Neil HATHAWAY (74Sqn), FltLt Doc WATSON (56Sqn) and FltLt D.P.CUTLER (Communication Relations Officer).
Special thanks to SAC Nicholas J. EASTON, Wattisham gate guard who handled our unannounced visit with typical British flair and who managed to persuade his superiors of the kind nature of our sudden visit.
A very special thanks to our friend FlOff Simon FAULKNER and his pal FltLt Barry CROSS, both skilled pilots with N°74 TIGER Squadron (the best !) for taking time out of a busy schedule and showing us around RAF Wattisham airbase.
Special thanks also to Antoine ROELS, Belgian Air Force photographer who shared some of his wonderful inflight shots for this book and to my friend Paul VAN HERCK for the photos of the early type camouflaged FG1's/F.G.R.2's.
Once again I appreciated the assistance of my friend Ronny MEURIS, with whom I share pleasant memories to this Wattisham visit.
To all pilots of N°74Sqn and N°56Sqn and to all crew members on the flight line, my sincere thanks.
Finally, to all those unintentionally forgotten in this column, my sincere apologies.

The author

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VERLINDEN PUBLICATIONS
/VERLINDEN & STOK NV

Published in Belgium by
VERLINDEN PUBLICATIONS nv.
Ondernemersstraat 4
KMO-Zone Mallekot
B-2500 LIER/BELGIUM

Published and distributed in
the United States by
VLS CORPORATION
West Port Industrial Park
804 Fee Fee Road
Maryland Heights, Mo 63043
USA

Project Manager &
Chief Editor : Francois VERLINDEN
US Editor : Bob LETTERMAN
Text & research : Willy PEETERS
Layout : Willy PEETERS
Electronic Editing : Roger STRAUS
Photosetting : SCANBO/Beerzel Belgium
Printed by : Drukkerij DE PEUTER nv.
/ Herentals Belgium

ISBN 90-70932-23-7

Photo data
All the photos, except for the inflight shots, were taken with Pentax and Minolta 7000 cameras with 35-105mm and 75-210mm lenses. Film is of course Kodachrome 64 with few exceptions.
Detail shots were taken with the assistance of a full automatic flashlight.

Front cover: Top, a dramatic view of an F-4J of N°74 Tiger Sqn heading for the runway inbetween thunderstorms. Its empty hardened shelter can be seen in the background.
A N°56 'Firebird" F.G.R.2 is towed inside its HAS on the other side of Wattisham airfield. A mechanic is assisting the pull-back by directing the nose gear.
FlOff Simon Faulkner(left) and fellow pilot FltLt Barry Cross proudly posing in front of one of their F-4J's. Unlike the majority of the RAF pilots, they have US type helmets with colorful top art.

Rear Cover: Sharkmouthed F.G.R.2 XT901/Y on the apron, being looked after by a RAF mechanic. Soon it will take its occupants way up high in a thrilling series of rolls, loops and other hair-raising maneuvers.
(Photo by Paul VAN HERCK).

Centerspread: Phantom F.G.R.2 of N° 56 Squadron, RAF playing wingman for Belgian Air Force N° 23 Sqn F-16A from Kleine Brogel airbase, chasing another batch of F-16's over Ardennes countryside during a recent squadron exchange.
(Photo by Antoine ROELS, BAF Public Affairs Team).

Opposite page: FG.1 XT873/A of N°111 Squadron in the former Dark Sea Gray/ Dark Green upper surface camouflage scheme. Large "limited visibility" roundels are carried on the air intake and a small fin flash covers part of the tail area. In contrast, colorful squadron markings are carried on nose and tail.
(Photo by Paul VAN HERCK).

Introduction

FGR1 & F.G.R.2

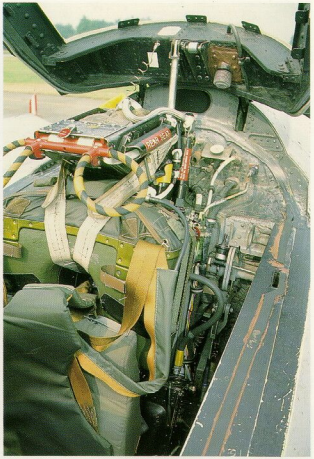
During the time the Royal Navy was looking for a replacement for their Sea-Vixen and the RAF wanted a successor for their Hunters, an F-4 landed at Royal Naval Air Station Yeovilton, on its way back to the States after having amazed all at the Paris Air Show.
Early cancellation of their own design (still several years off) and persistent pushing by McDonnell Douglas made the British decide to choose the F-4 Phantom both for the Royal Navy and the RAF.
Complex upgrading started on both types (F-4K for the Navy and F-4M for the Air Force). The K model needed to be modified to fit the smaller Fleet Air Arm carriers with shorter take-off distances.
The M model for the RAF was not so extensively modified but was also equipped with a Rolls Royce Spey engine. Not only promises by Rolls Royce of superior performance and considerable fuel savings, but the desire to come to terms with opponents of the "foreign purchase", defense officials had the more powerful British Spey engines installed in both F-4 types. Unfortunately, the integration of this engine proved to be unsuccessful at first, so extensive and costly modifications were needed. These included downward canting of the engines and the deepening and widening of the entire engine bays to accomodate the larger engines. Extra titanium to the lower tail section was needed to withstand the increased heat of the powerful engines. Bigger main intakes enabled more airflow to the engines while auxiliary air intakes on top of the fuselage were installed for smooth taxiing.
With the redrawal of the larger aircraft carriers, the Royal Navy no longer uses the F-4, the bulk of Phantoms is being operated by the Air Force.
Today, only N°56Sqn (F.G.R.2)and N°74Sqn (F-4J) still fly the Phantom operationally in Royal Air Force service with replacement likely to happen in the not too distant future.

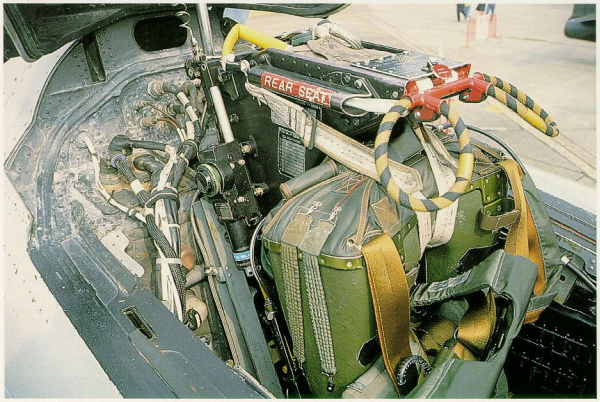
RAF Wattisham based groundcrew preparing to push and tow F.G.R.2 XV476/S of N°56 Sqn into its HAS (Hardened Shelter) on a dull Tuesday afternoon in June 1989. This method of retrieving military aircraft with a winch assembly at the aft end of the shelter, is gaining interest in many NATO air force units (remember the F-111 at RAF Upper Heyford in Lock On N° 5).
The winch is controlled by the crewmember on the right with a hand-held control box. The winch cable can be seen aft of the Phantom.

(Right) Close view on the 380 gallon fuel tank carried on the outboard wing pylon and the dual sidewinder launching rail on the inboard pylon. Note the boot marks on the fuselage above the wing walkway panel area.

(Top) The aft end of the left inboard pylon with part of the Sidewinder launching rail in detail.
(Left) The nose section of FGR.2 XT891 viewed from the left. Note the different color of the nose radome. A sensor probe is located just below the large ram air coolant intake on the lower side of the fuselage. Also note the typical FGR.2 nose landing gear door with a different antenna blade and the lack of the three landing lights featured on the FGR1 (see previous page).
The retractable boarding ladder can be seen in front of the intake splitter plate.

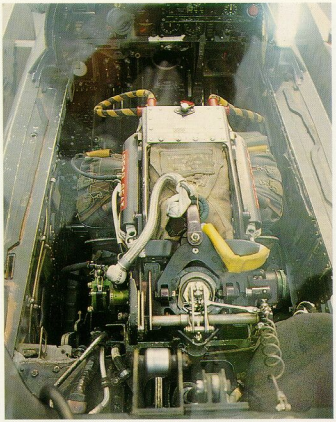
(Above) A detail seldom shown in books such as this. The fuel connecting lines and electrical wiring can clearly be seen. Note the pylon is an integral part of the fuel tank.
(Left) A 308 gallon(UK) tank and a travel pod are mounted on the outer wing and inboard pylon respectively on this Leuchars based FGR.2 Phantom.
Note the very pointed inboard pylon with an unusual bomb rack holding the travel pod and the way the pylon is mounted to the lower wing surface.





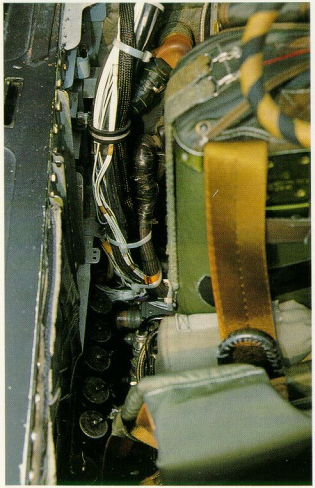
(Top left) A lateral view on the left side console of the aft cockpit. Communication control panels, cabin air control panel, oxygen control panel, ICS panel are some of the units located on this side. Note the small circuit breaker panel hidden below the canopy frame against the side wall.

(Top and left) Upper part of the rear ejection seat and the area behind the seat with a close look at the canopy actuator mechanism. Note the way most of the wiring (of various sizes) connects to the rear canopy bulkhead.



(Right) The parachute release mechanism from above. Modelers will love this detail shot because, although seldom shown, it is of significant importance when displaying models with clear canopies.

(Below) Also important when displaying models with open cockpit is the area next to and aft of the seat. This view shows where the feed lines shown in the bottom picture on page 14 originate.



(Below) The right side of the aft cockpit features an armrest to facilitate handling of the NAV control stick seen at the left. Very eminent in this view is the fabric covering the right sidewall which has obviously suffered from the navigator's arm movements.

Pilot and navigator of N°56 squadron preparing to take FGR.2 XV466/K up into the cloudless blue sky. You can tell the engine is running because the auxiliary air intakes on top of the aft fuselage are openend. Unlike the FGR.2 on page 8, this aircraft is wearing the scaled-down "Firebird" squadron markings on the nose. The next step is a low-visibility two-tone gray camouflage scheme and pale-colored fin flash and intake roundels as displayed by todays RAF fighters.
(Photo by Paul VAN HERCK)

N° 56 (Fighter) Squadron
RAF Wattisham, Suffolk

N° 56 Squadron was formed at Gosport on 8 June 1916 and went to France in April 1917. For the rest of the war the Squadron was engaged in fighter and ground attack duties on the Western Front, apart from two weeks in June 1917 which were spent in Kent as part of the air defences of London. Many famous pilots served with N° 56: Captain Albert Ball? VC, DSO, MC, who was a Flight Commander until his death in May 1917, and Captain J. T. B. Mc Cudden, VC, DSO, MC, MM, who joined the Squadron in August 1917. The Squadron accounted for 427 enemy aircraft during its period of service in France.
In February 1919 the Squadron returned to England and was disbanded at Bircham Newton on 22 January 1920. On 1 February 1920 N° 80 Squadron at Aboukir was renumbered N° 56. Two flights were disbanded at Aboukir on 23 September 1922 and one flight was sent to Constantinople on 26 September 1922. The Squadron, less one flight, reformed at Hawkinge on 1 November 1922; the tird flight from Constantinople, completed the establishment of the Squadron in August 1923. The Squadron re-equipped in September 1924, September 1927, October 1932, May 1936, July 1937 and May 1938.
At the beginning of the Second World War, N° 56 Squadron flew defensive patrols and, in June 1940, helped to cover the evacuation of Dunkirk, later taking part in the Battle of Britain. In September 1941 the Squadron re-equipped. It was engaged on ground attack duties during

the Dieppe Landings and continued with fighter-bomber sweeps over northern France until February 1944.
The Squadron re-equipped again in April 1944 and took part in escort and shipping reconnaisance missions until a further re-equipment in July 1944. In September 1944 the Squadron moved to the Netherlands and flew fighter sweeps over Germany before returning to England in April 1945 where it was succesfully employed in intercepting V-1 flying bombs until the end of the war. During the Second World War the confirmed victories were 130 enemy aircraft and 63 flying bombs destroyed.
On 31 March 1946 the Squadron was renumbered 16 Squadron and, on the same day, N° 124 Squadron at Bentwaters was renumbered 56 Squadron. It re-equipped in 1954 and 1955. The Squadron moved to Wattisham in July 1959 and re-equipped again in March 1962. In April 1967 the Squadron was deployed in Cyprus where it provided air defence of the Cyprus air space until it returned to Wattisham in January 1975 to form part of the United Kingdom Air Defence System. In July 1976 the Squadron re-equipped with Phantom FGR2s which it still operates in the Air Defence role.

XV435/R after touch-down with its drag chute fully deployed on the runway of Kleine Brogel AB/ Belgium. The N°92 squadron emblem is carried on the tail fin and below the ILS antenna. The chequered red and yellow squadron banner was painted on the top fin fairing.
Note the position of the leading edge slats, flaps and the position of the pivoting tail plane during landing.

BT
XV420

F.G.R.2 Phantom, N° 56 Sqn, RAF Wattisham
& F-16A, BAF Kleine Brogel
(Photo Antoine ROELS/VSP)

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A four-ship formation of F.G.R.2's from N° 56 Sqn joined by a two-ship formation of F-16's from N° 23 "DEVIL" Sqn, Kleine Brogel.
The aircraft are seen on a familiarization flight over Belgian territory.
(Photo by Antoine ROELS/VSP).

(Top) Wing Commander Clarke (front seat) and 74 Sqn Leader Smyth (rear seat) awaiting the GO signal of the crew chief on the right. The taxiway was taken by another F-4J of the same squadron who was number two of a three ship formation to challenge the dark thunderous sky in the background. Soon after the aircarft passed, ZE350/"TIGER" rolled out for another afternoon mission.

N°74 Squadron
RAF Wattisham, Suffolk

F-4J

The history of this famous RAF squadron goes back to 1917, but it was during World War II that the 74th earnt recognition. N°74 (Fighter) Squadron was one of the main units involved in the defense of Great Britain against German bombers.
In the early 1960's, while stationed at RAF Coltishall and flying the BAC F.1 Lightning, it was involved in the foundation of todays most competitive squadron exchanges, the "Tiger Meet". Well known to all aircraft enthusiasts in Europe, this annual gathering of NATO squadrons, proudly wearing a tiger in their emblem, allow participating squadrons to train with and against each other.
Unfortunately, N°74 Squadron was disbanded in 1968 while stationed in Singapore, flying the advanced F.6 Lightning variant and had to wait until 1984 to be reformed at RAF Wattisham in Suffolk and regain their position within the ranks of the Royal Air Force fighting squadrons.
By that time Britain, having been involved in the Falkland conflict, opted for permanent stationing of Phantom fighter aircraft in the Falkland region, creating a gap in Britains air defense system.
Reforming N°74 Squadron and equipping them with ex-US Navy F-4J Phantoms was the least expensive solution. The story goes that these F-4J's were mistakenly painted in the unlikely blue-gray color scheme (shown in the photos on the following pages) by some paintshop attendants at the US storage depot. No attempts were made to repaint the aircraft on their arrival in the UK except for the overall black finish of the tail section. Fifteen F-4Js were delivered, aircraft numbers ranged from ZE35O/T through ZE364/Z. The tailcodes of ZE350 through ZE354form the word TIGER while the three following tailcodes read as SQN. Aircraft ZE358/H was lost in a crash over Wales in 1987.
N°74 Tiger Squadron is presently stationed at RAF Wattisham, an airbase hidden in the beautiful Suffolk countryside where it shares its facilities with N°56 Squadron.

(Top) A view on the outer wingtip folding mechanism of the right wing.

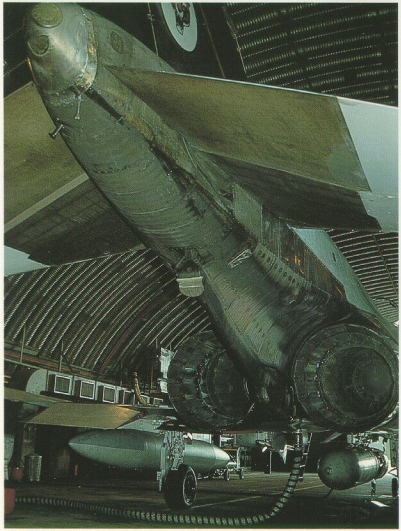
(Top left) The left inboard pylon of this F-4J carries a Sidewinder aquisition round. The absence of fins on the latter are apparent. The distinctive shape of the pylon and attachment points are also clearly shown. Note the antenna on top of the air intake (both sides, F-4 Js only) and the low voltage formation light strip on the fuselage side. The aircraft's static discharge line is hooked up just in front of the wing root.

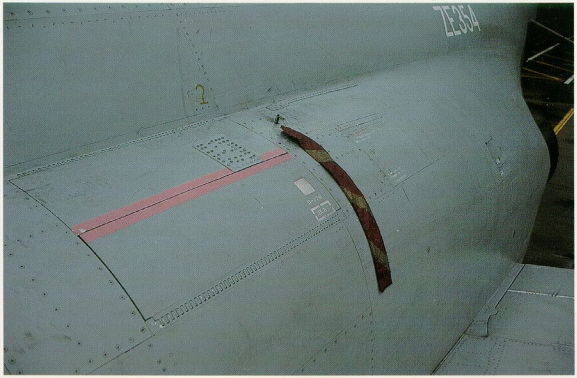
(Bottom left) Two Sidewinder 9L (or Lima) air-to-air missiles are carried by this FGR.2 of N° 19 Squadron. Blue markings indicate an "inert" or practice round, which carries no warhead but which is connected to the on-board weapons control unit, able to inform the two pilots on a possible "Lock On".
Note the aft fin of the Sparrow missile carried in the forward fuselage bay and the red warning triangle at far right of the photo on the lower edge of the air intake.

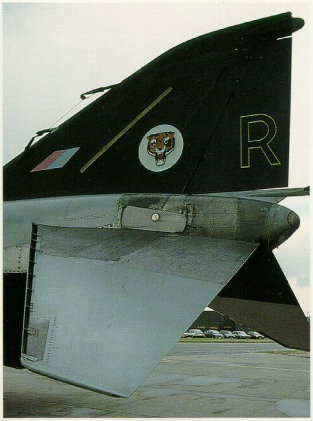
(Next page) Some views on the F-4J tail section and the General Electric J-79 engines which were thought inferior to the Rolls Royce Spey engines. Note the "Tiger" badge, proudly worn on the vertical tail.

R

ZE354

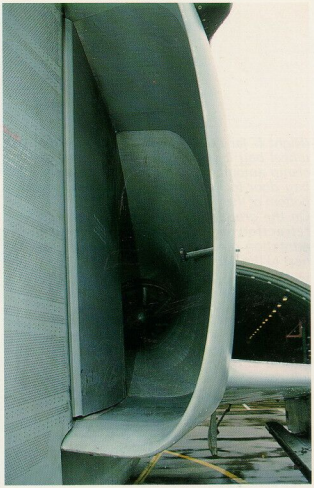


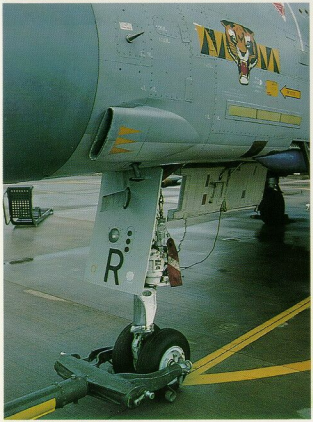




(Top) The outer part of the slotted stabilator has the same color as the upper fuselage. Inboard areas, exposed to the exhaust gasses of the dual engines are left unpainted.
(Top left) Instead of auxiliary air intakes (like the FG.1 & FGR.2), chaff and flare dispension units are installed inside the upper aft fuselage. A remove before flight flag secures the split doors. Note the shape of the wing root at right.
(Left) The aft exhaust section from the left. The small louvers on top of the exhaust nozzle dumps air from the powerplant bays. The cooling ram air is ducted into the bays through the air intake at the bottom of the vertical fin.
(Next page)) A colorful tigerhead adorns the forward nose section of ZE354/R (or any 74Sqn Phantom).The fixed center section of the controlable splitter plate with boundery layer bleed holes assists air flow control into the intake. An intake sensor is mounted to the outer wall of the intake duct.
The bottom pictures show a ram air cooling inlet located just aft of the nose cone with the static sensor probe above it. Just underneath the inlake is the exterior temperature probe. A leftover from its former US Navy life, three carrier landing lights are installed in the forward facing nose landing gear door.
Two missile launching rails are mounted aside the inboard pylon. Note the shape of the latter.

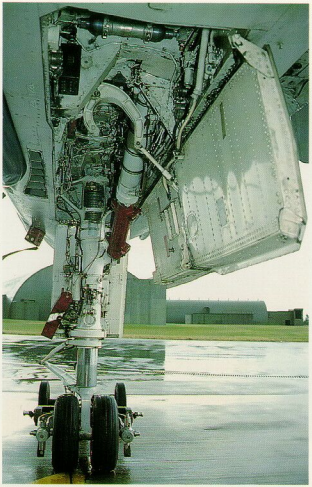
NCO IC
CPL GEWEKY

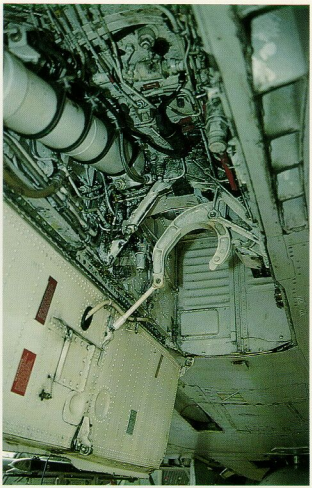




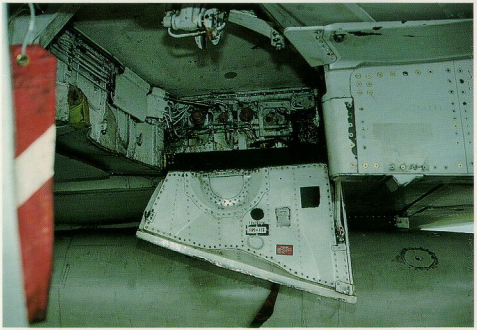
(Right & far right) The nosegear and the nose wheel bay inner detail. The nosegear locking clamp automatically retracts the bay door. The bay door locking bracket can be seen at the bottom of the door.
On the ground, the nosegear is secured from retraction by a clamp surrounding the retraction oleo. Note the cooling air exhaust next to the bay.

(Bottom) The retractable step from a different angle and a better view on the forward bay door details. The middle picture shows the external power hook up underneath the left intake. Excess bleed air from the intakes is guided through the louvers at front. In the top left corner is part of housing for the catapult holdback hooks, which have been removed on British F-4J's.
Far right picture shows the forward missile housing of the starboard side. A good view showing the intake is mounted some distance from the fuselage. Note the tie-down rings on the landing gear strut.

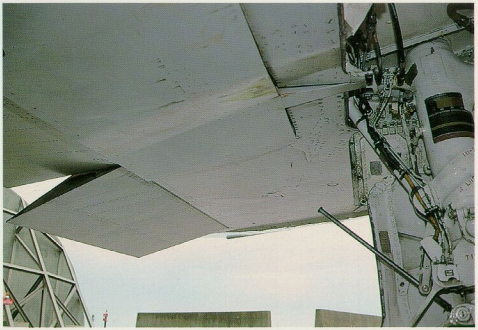




(Left & far left) Outboard view of the right main landing gear strut. Another "retraction preventor" is installed on the main gear actuator. Note the full compression of the gear strut which features another tie-down ring and the scissor linkage bar.

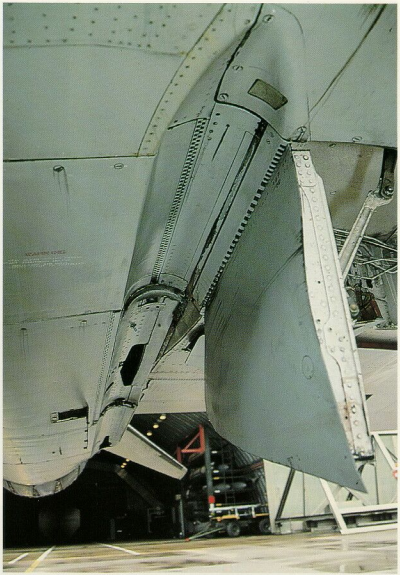


Three gear door sections cover the main wheel well. The inner section is mounted on the fuselage while the largest section is mounted on the wheel strut and the smallest section is mounted to the wing.

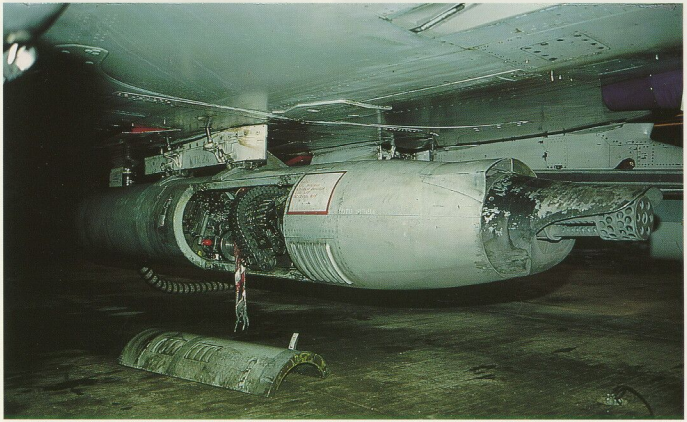


The bottom speed brake just aft of the main gear well. Part of the latter can be seen at far right.

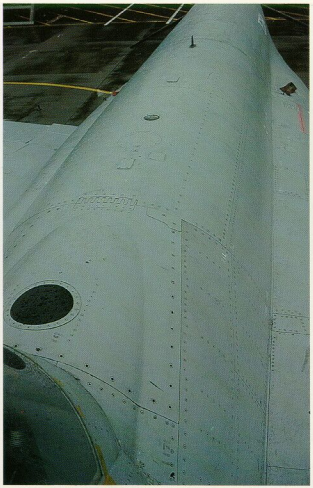
Three views of the rear starboard AIM-7E Sparrow AAM bay also showing the hinges of the inboard door section and some of the lower engine bay access doors.
Bottom pictures of the 500-gallon centerline fuel tank also show the bottom reinforcements to the fuselage.

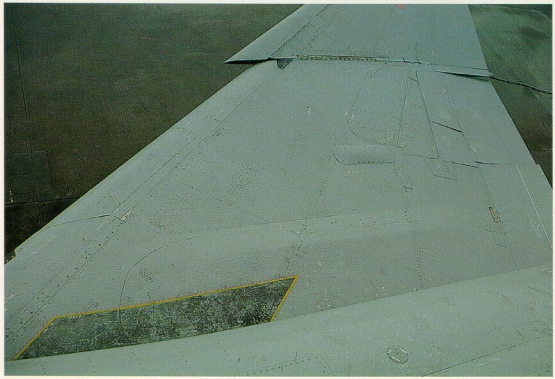


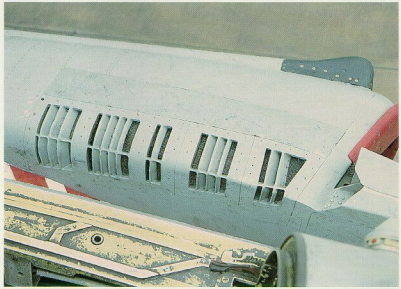
Centerline hardware of a different kind. For close-range air to air involvment, the F-4J is equipped with a SUU-23/A gun pod. Once the side cover is removed, the familiar General Electric M61 20mm Vulcan rotary cannon (installed in most of the modern US jets) is revealed.



The middle section houses the canon and ammo conveyor system while the 1,200 rounds are stored in the aft part of the gun pod.
Note the exhaust gas emitter on the front of the gun barrels. Again clearly shown are the bottom fuselage reinforcement plates which were necessary to carry heavy centerline hardware.





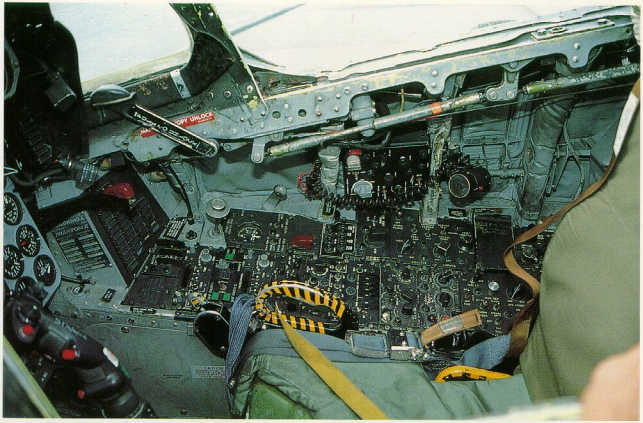


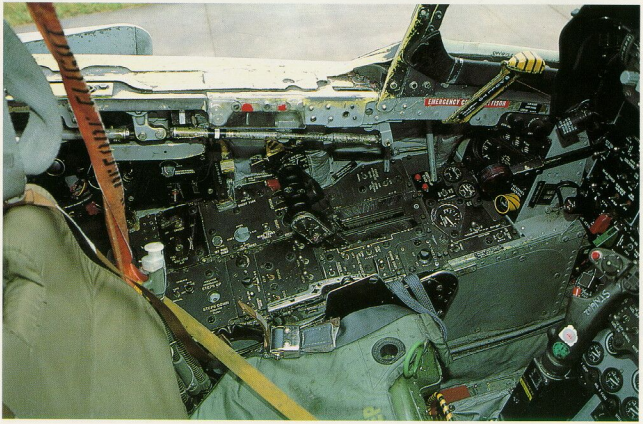
Upper fuselage detail with the IFF antenna immediately behind the rear canopy. Note the walkways on the upper wing surfaces next to the fuselage.
The picture above shows the upper bleed air holes on the inside of the left air intake.

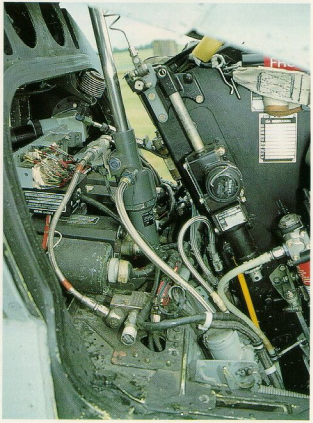
(Above) Radio call signs and checklists can be seen mounted on the canopy framing.

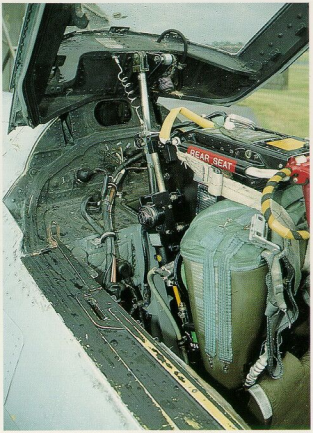
The following three pages are devoted to the F-4J front cockpit and the ejection seat installed.
The difference with the F.G.R.2 cockpit on page 9 and following is eminent. One of the pilots assisting the photo-shooting pointed out that differences do occur between aircraft of the same type.
On the other hand, cockpit colors of all types are the same with a few nuances here and there.
Important feature in the photo at right is the additional weapons selector panel below the main instrument panel. On the left is the weapons selector knob while on the right is located the station selector knob. The Sparrow, Sidewinder and gun control panel is located on the left on the main instrument panel.

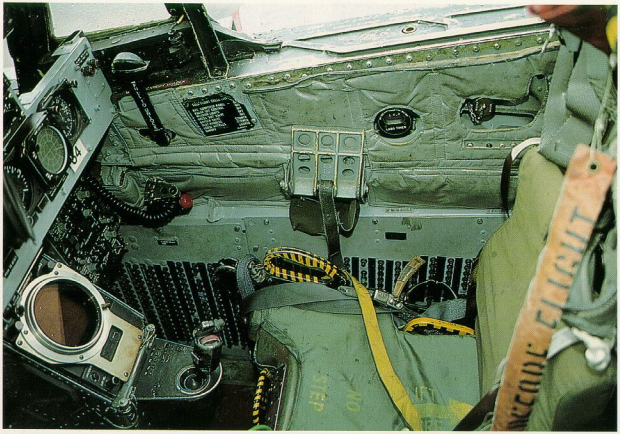
(Next page) Although overall layout of the front cockpit is the same with all Phantoms, slight differences in side console paneling occur.
The bottom right picture allows a good view on the canopy actuator and the area behind the seat.

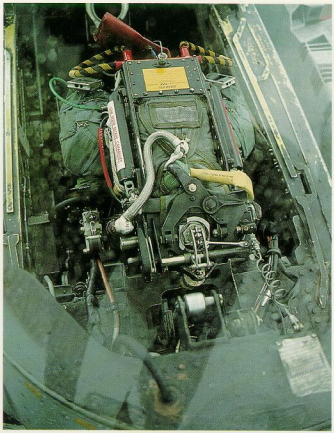


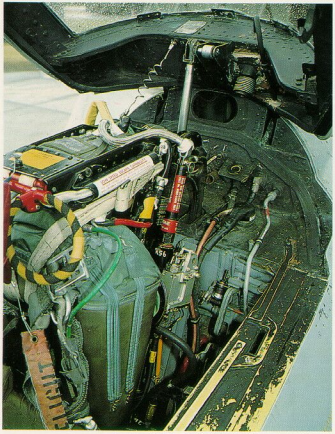


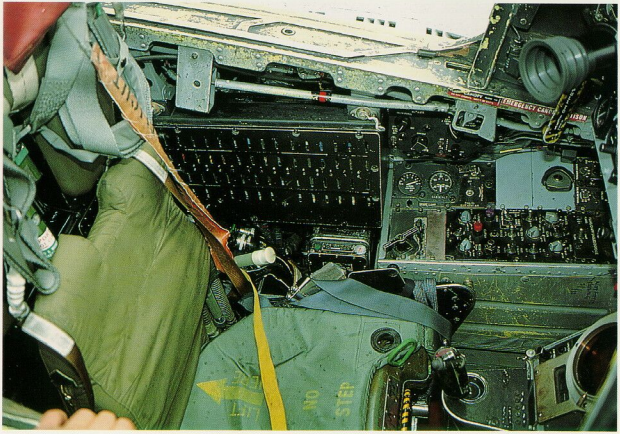



REAR SEAT









(Previous page) Unlike the F.G.R.2, the F-4J has no side console mounted on the right side of the aft cockpit. Instead, two large circuit breaker panels are located at the lower part of the side wall. Also note the different layout of the left side console in the lower right photo and the stencilling on the seat cushion.

(This page) The small stick on the center console does not allow the RIO (Radar Interceptor Officer) to fly the aircraft but enables him to control radar movements. A communications control panel is located at the right of the radar console. Note the standby compass and the ECM control panel on top of the main panel.

KIT REVIEW

REVIEW POLICY

Anyone familiar with the LOCK ON series will be familiar with our kit review policy.

Still we believe that only the best available kits are worth building, even if it means spending a bit more on the initial purchase. This will be rewarded b

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